

Claim Amendments

Claims 1-6 and 10 and 14 have been cancelled. Claims 7-9 have been amended. Claims 15-19 have been added.

Support for newly added claims 15-17 can be found on page 4, lines 9-14 of the published PCT application (WO 2005/061611), for example.

Support for newly added claim 18 can be found on page 4, line 16, for example.

Support for newly added claim 19 can be found on page 4, lines 17-18, for example.

Remarks/Arguments

Claims 7-9 are rejected under 35 U.S.C. 103(a) as allegedly being unpatentable over Langer et al. (U.S. Pat. No. 6,244,893) in view of Hudson et al. The Examiner alleges that Langer et al. teach a method of making a semi-interpenetrating network which comprises crosslinked chitosan and anionic hyaluronic acid using cross-linking agents (Office Action, page 4). The Examiner states that Langer et al. does not teach the claimed reaction conditions. The Examiner argues that Hudson et al. teaches that partially acetylated chitosan is soluble in water and that it would therefore have been obvious to one of ordinary skill in the art to employ a pH of about 7 since this would avoid having to use a neutralization step.

Langer et al. is directed to semi-interpenetrating polymer networks. Langer et al. teaches that the preferred method of cross-linking is by photoactivation (Column 2, lines 22-26). The Examiner admits that Langer et al. does not teach the reaction conditions required by the presently claimed method but that states that it would have been obvious to arrive at the presently claimed method by simply using neutral pH. Contrary to the Examiner's assertion, it would not have been obvious to one of ordinary skill in the art to conduct the reaction at neutral pH because chitosan itself is water-insoluble at neutral pH. The present inventors have found conditions under which the semi-interpenetrating network can be formed wherein the amine groups of the water soluble derivative of a basic polysaccharide are not protonated and crosslinking between the water soluble derivative of the basic polysaccharide and the anionic polysaccharide is avoided. For example, the inventors have found that using partially acetylated chitosan permits the cross-linking reaction to be conducted at neutral or mildly alkaline pH ensuring that only the amine groups of the basic polysaccharide react with the crosslinking agent. Langer et al. does not disclose reaction

conditions under which the basic polysaccharide can be cross-linked without protonating the amine groups of the basic polysaccharide and avoiding reaction of hydroxyl groups of the anionic polysaccharide.

The teaching of Hudson et al. does not add to those of Langer et al. to render the presently claimed methods obvious. The Examiner asserts that Hudson teaches that partially acetylated chitosan is soluble in water at neutral pH. Hudson et al., however, is a review of chitin and chitosan and is not directed to a method of preparing a semi-interpenetrating network. There is nothing in Hudson et al. that would teach one of ordinary skill in the art the reaction conditions under which crosslinking of a water soluble derivative of a basic polysaccharide containing primary and/or secondary amine groups in the presence of at least one anionic polysaccharide could be achieved under conditions which avoid protonation of said primary or secondary amine groups and which also avoid reaction of hydroxyl groups or any other functional group on the anionic polysaccharide.

For the reasons stated above, withdrawal of this rejection is respectfully requested.

Conclusion

In view of the above amendments and remarks, it is believed that all claims are in condition for allowance, and it is respectfully requested that the application be passed to issue. If the Examiner feels that a telephone conference would expedite prosecution of this case, the Examiner is invited to call the undersigned at (978) 251-3509.

Respectfully submitted,

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Dated: May 28, 2008